Claims

1. Use of bacterial ghosts to package active substances.

2. Use of bacterial ghosts as carrier or/and targeting vehicles for an active substance.

3. Use as claimed in claim 1 or 2,
characterized in that
the active substance is selected from pharmacologically active substances, labelling substances, substances that are effective in agriculture and dyes.

4. Use as claimed in one of the previous claims,
characterized in that
the active substance is present in the bacterial ghosts in an immobilized form.

5. Use as claimed in claim 4,
characterized in that
the immobilization is achieved by means of interactions with a receptor which is located on the inner side of the ghost membrane.

6. Use as claimed in claim 5,
characterized in that
the receptor is a heterologous polypeptide which is integrated into the cytoplasmic membrane of the ghosts.

7. Use as claimed in claim 5 or 6,
characterized in that
the heterologous polypeptide is a fusion polypeptide containing streptavidin or avidin.

8. Use as claimed in one of the claims 4 to 7,
characterized in that
the active substance is directly immobilized on the receptor.

9. Use as claimed in claim 8,
characterized in that
an active substance derivatized with receptor binding groups is used.

10. Use as claimed in one of the claims 4 to 7,
characterized in that
the active substance is indirectly immobilized on the receptor.

11. Use as claimed in claim 10,
characterized in that
the active substance is indirectly immobilized on the receptor by means of active substance-binding substances which additionally have at least one additional binding site for the receptor.

12. Use as claimed in claim 11,
characterized in that
the active substance-binding substances are selected from polylysine, dextran and protamine sulfate.

13. Use as claimed in claim 4,
characterized in that
the immobilization is achieved by forming a matrix inside the ghost.

14. Method as claimed in claim 13,
characterized in that
the matrix is formed inside the ghost by polymerization or/and copolymerization of monomers.

15. Method as claimed in claim 13 or 14,
characterized in that
the polymerization is started by increasing the temperature, by UV radiation or/and addition of initiators.

16. Use as claimed in claim 13 or 14,
characterized in that
an enzyme-catalysed polymerization is carried out.

17. Use as claimed in claim 16,
characterized in that
enzymes are used which catalyse the synthesis of polyhydroxyfatty acids, polysaccharides or polypeptides.

18. Use as claimed in claim 13,
characterized in that
the matrix is formed by the aggregation of substances capable of aggregation.

19. Use as claimed in one of the previous claims, **characterized in that** the ghosts contain heterologous surface molecules that are specific for target cells or target tissue s.

20. Use as claimed in one of the previous claims in the medical field.

21. Use as claimed in claim 20 for preventing or/and for combating diseases caused by pathogens, tumour diseases or autoimmune diseases.

22. Use as claimed in claim 20 or 21 for gene therapy.

23. Use as claimed in claim 20 or 21 for nucleic acid vaccination.

24. Use as claimed in claim 20 for diagnostic purposes.

25. Use as claimed in one of the claims 20 to 24, **characterized in that** the ghosts are administered by the same route as that of the natural infection of the organism with the pathogen.

26. Use as claimed in one of the claims 1 to 19 in the agricultural field.

27. Use as claimed in one of the previous claims, **characterized in that** the ghosts contain several different active substances.

28. Use as claimed in one of the previous claims, **characterized in that** mixtures of ghosts each containing different active substances are used.

29. Use as claimed in one of the previous claims, **characterized in that** the ghosts are derived from gram-negative or/and gram-positive bacteria.

30. Use of bacterial ghosts to prepare a nucleic acid vaccine.

31. Use of bacterial ghosts as carrier or/and targeting vehicles for a nucleic acid vaccine.

32. Use as claimed in claim 30 or 31, **characterized in that** the nucleic acid packaged in the ghosts contains a sequence coding for the antigen to be expressed in operative linkage with expression control sequences.

33. Use as claimed in claim 32, **characterized in that** the nucleic acid additionally contains a bacterial origin of replication, a prokaryotic selection marker gene, a reporter gene or/and immunomodulatory sequences.

34. Use as claimed in one of the claims 30 to 33, **characterized in that** the ghosts contain several different antigen-encoding nucleic acids.

35. Use as claimed in one of the claims 30 to 34, **characterized in that** a homologous combination of bacterial ghosts and antigen-encoding nucleic acids is used.

36. Use as claimed in one of the claims 30 to 34, **characterized in that** a heterologous combination of bacterial ghosts and antigen-encoding nucleic acids is used.

37. Bacterial ghosts containing an active substance encapsulated therein.

38. Bacterial ghosts as claimed in claim 37, **characterized in that** the active substance is a nucleic acid.

39. Pharmaceutical or agricultural composition comprising a bacterial ghost containing an active substance packaged therein.

40. Process for producing bacterial ghosts as claimed in claim 37 or 38 or a composition as claimed in claim 39 comprising the steps
(a) providing bacterial ghosts and
(b) contacting the bacterial ghosts with an active substance under conditions which lead to a packaging of the active substance in the ghosts.